

New data support the specific status of Reiser's Tyrannulet, a central Brazilian endemic

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Reiser's Tyrannulet *Phyllomyias reiseri* was described as a distinct species by Hellmayr (1905), based on a single male specimen collected at Grotão do Santo Antônio, near Santa Filomena (9°07'S, 45°56'W), southern Piauí. Later, Hellmayr (1927) regarded Reiser's Tyrannulet, and Urich's Tyrannulet *P. urichi* from northern Venezuela, as subspecies of the Greenish Tyrannulet *P. virescens*, from eastern Brazil, northeastern Argentina and Paraguay. Zimmer (1955) proposed that Reiser's Tyrannulet should be considered as a distinct species and reported new specimens from Zanja Morotí (c. 23°00'S, 56°30'W), Paraguay. Traylor (1979, 1982) treated Reiser's and Urich's Tyrannulets once more as subspecies of the Greenish Tyrannulet. Stotz (1990) re-analysed, with more specimens than any other author, the relationship between Reiser's and Greenish Tyrannulets and concluded that the former taxon should be considered as a distinct species. Stotz (1990) also suggested that Urich's Tyrannulet may be more closely related to Reiser's Tyrannulet than to the Greenish Tyrannulet. Teixeira *et al.* (1991) examined some of the specimens used by Stotz (1990) and suggested that Traylor's previous arrangement of these three taxa was perhaps correct. Here, I re-evaluate the taxonomic status of Reiser's Tyrannulet, based on the analysis of almost all specimens used by previous authors plus new specimens and ecological information on this taxon collected recently in central Brazil.

Methods

I examined 19 specimens of Reiser's Tyrannulet and 62 of Greenish Tyrannulet housed at the Museu Paraense Emílio Goeldi, Belém (MPEG); the Museu de Zoologia da Universidade de São Paulo (MZUSP), São Paulo; the American Museum of Natural History (AMNH), New York; the Naturhistorisches Museum (NM), Vienna; and Zoological Museum, University of Copenhagen (ZMUC). Differences in tail and wing measurements within and between taxa were compared by using the Mann-Whitney U test with tied ranks (Zar 1984: 141). Data on the natural history of Reiser's Tyrannulet were collected at several sites (see below) in central Brazil from 1987 to 1994.

Results

The following plumage characters, which were pointed out by Stotz (1990) as important in distinguishing Reiser's Tyrannulets from

TABLE 1.

Measurements (mm) of Reiser's Tyrannulet *Phyllomyias reiseri* and Greenish Tyrannulet *P. virescens*

		Wing				Tail			
		<i>n</i>	range	mean	s.d.	<i>n</i>	range	mean	s.d.
<i>reiseri</i>	♂	12	54.0–59.5	56.5	1.6	12	48.5–57.5	51.7	2.5
	♀	7	52.0–58.0	56.1	2.3	7	46.5–53.5	50.9	2.4
<i>virescens</i>	♂	31	58.0–65.0	61.8	1.9	29	54.0–64.0	59.7	2.5
	♀	31	55.0–62.0	59.5	2.0	31	51.0–61.5	55.9	2.7

Greenish Tyrannulets, were found in all specimens of *P. reiseri*: (a) pale yellow underparts with a weak olive wash across the breast; (b) bright, yellow-green upperparts; (c) crown feathers tipped with grey; (d) lores and cheek yellowish-white. Stotz (1990) suggested that the colour of the wing-bars in Reiser's Tyrannulets is less greenish-yellow than in Greenish Tyrannulets. However, wing-bars in most (63%) of the specimens of Reiser's Tyrannulet are as brightly greenish-yellow as in some specimens of Greenish Tyrannulet. Stotz also suggested that the ear coverts in Reiser's Tyrannulets are yellow, little, if at all, tipped with olive, while in Greenish Tyrannulets they are tipped extensively with dusky or olive. In fact, most (84%) of the specimens of Reiser's Tyrannulet agree with this description, but three specimens from different parts of the range of this taxon have ear coverts tipped as extensively with olive as some specimens of Greenish Tyrannulet.

Males and females of the Greenish Tyrannulet differ significantly in wing (Mann-Whitney test, $U=752.5$, $P<0.001$) and tail measurements ($U=756.0$, $P<0.001$) (Table 1). In Reiser's Tyrannulets, males and females do not differ either in wing ($U=42.5$, $P=0.96$) or in tail ($U=46.0$, $P=0.73$) measurements (Table 1). Males of Greenish Tyrannulet have significantly longer wings ($U=366.0$, $P<0.001$) and tails ($U=342.0$, $P<0.001$) than males of Reiser's Tyrannulet (Table 1). Similarly, females of Greenish Tyrannulet have significantly longer wings ($U=195.0$, $P<0.01$) and tail ($U=199.5$, $P<0.01$) than females of Reiser's Tyrannulet (Table 1). Despite these significant differences, the wing and tail measurements of Reiser's and Greenish Tyrannulets overlap, and so are unreliable as a means of distinguishing them (Table 1). Belton (1985) listed three male Greenish Tyrannulets with body masses of 10–12 g. In seven males of Reiser's Tyrannulet that I collected, the body masses were 7.0, 7.0, 7.0, 7.0, 7.5, 8.0 and 8.0 g. Even though these data are few, it seems that body mass could be used to distinguish Reiser's from Greenish Tyrannulets.

Belton (1985) described the soft-part colours of Greenish Tyrannulets as follows: tarsus medium to dark grey; maxilla brown to black; mandible brownish-white to greyish-white with dark tip; iris brown. I recorded the soft-part colours of Reiser's Tyrannulets as follows

(number of specimens in parentheses): tarsus dark grey (5) or black (8); maxilla black (10); mandible varying from pinkish (1) to whitish (12) with a black tip; iris dark brown (2) or pale brown (12). Based on these data, it seems that these two taxa do not differ conspicuously in the colour of the soft parts.

Belton (1985) recorded the song of Greenish Tyrannulets as follows: "starts with rapid series of staccato "chk's" then rises in pitch and slows into longer sounds, finally dropping pitch again at end: chk-chk-chk-chk-chk-che-eeee-eeee-eeee-eeee-chu-choo." Willis & Oniki (1991) recorded the song of Reiser's Tyrannulets as a rough downscale "briu-briu-briu-briu-briu-briu-briu" and added: "We did not register any song like that of *P. virescens* in São Paulo State".

I observed or collected Reiser's Tyrannulets (specimens at MPEG) in the following new localities: **Bahia**—Coribe (13°45'S, 44°28'W), Fazenda Formoso, May 1988 and September 1993; Palmas de Monte Alto, Fazenda Boa Vista (c. 14°17'S, 43°20'W), September 1991; **Minas Gerais**—Itacarambi (15°08'S, 44°04'W), Fazenda Olho d'Água, October 1987; Arinos (15°53'S, 46°01'W), Fazenda Tira Teima, November–December 1987; **Goiás**—Iaciara (14°09'S, 46°37'W), Fazenda São Bernardo, July 1988; São Domingos (13°24'S, 46°19'W), Fazenda COSIPA, September 1993; **Mato Grosso do Sul**—Bonito, Fazenda Formoso (21°16'S, 56°40'W); Fazenda Harmonia (21°15'S, 56°42'W); Fazenda Pitangueiras (20°52'S, 56°55'W), April–May 1994. All these sites plus other localities in which Reiser's Tyrannulets were collected are located within or along the borders of the *cerrado* region (Fig. 1). I have found Reiser's Tyrannulets only in the canopy or borders of tropical dry forests (see Ratter *et al.* 1978 for description of this habitat). However, specimens from Brasília (MZUSP 51943-944), Jaraguá (MZUSP 15452), Santana do Paranaíba (MZUSP 12745), São Gabriel de Goiás (MPEG 19344) and Formosa (MPEG 19275) may have been collected in evergreen gallery forests rather than in semi-deciduous to deciduous dry forests. In contrast to Reiser's Tyrannulet, Greenish Tyrannulets occur mainly in the canopy and borders of the evergreen or semi-deciduous forests of the Atlantic Forest (Sick 1985, Stotz 1990, Ridgely & Tudor 1994), and their extensions along the Paraná and Paraguay drainages (e.g. Misiones), and in the eastern part of the *cerrado* region (specimens from Lagoa Santa, 19°38'S, 43°53'W, ZMUC; and Ribeirão Jordão, 18°26'S, 48°06'W, AMNH 499938) (Fig. 1).

Discussion

Reiser's Tyrannulets differ in plumage, voice and habitat requirements from Greenish Tyrannulets. Based on these data, I agree with Hellmayr (1905), Zimmer (1955) and Stotz (1990) that Reiser's Tyrannulet should be regarded as a distinct biological species rather than as a subspecies of Greenish Tyrannulet. The taxonomic status of Urich's Tyrannulet, from northern Venezuela, needs to be evaluated with more data. However, because this taxon has a number of diagnostic characters (see Stotz 1990) and is separated from its closest



Figure 1. Distribution of Reiser's Tyrannulets (filled circles, specimens examined; open circles, records from the literature), Greenish Tyrannulets (filled triangles, specimens examined; open triangles, records from the literature), Ulrich's Tyrannulet (filled square), and Sclater's Tyrannulet (black patches). Limits of the major South American ecological regions are from Ab'Saber (1977). Several small regions are grouped together into the large Andean Region.

relatives by an enormous distance (Fig. 1), I suggest that Ulrich's Tyrannulet should be considered as a distinct species too. Notwithstanding Stotz's (1990) comments that Ulrich's Tyrannulet is more closely related to Reiser's than to the Greenish Tyrannulet, I suggest that to propose phylogenetic relationships within this group based only on plumage and morphometric characters is premature, and that DNA or alloenzyme data are required in this particular case.

In further studies, one should pay more attention to the possible phylogenetic relationships of Ulrich's, Reiser's and Greenish

Tyrannulets with Sclater's Tyrannulet *P. sclateri*, from parts of the Andean Region (Fig. 1). This species replaces Reiser's, Ulrich's and Greenish Tyrannulets geographically and these four species have already been placed in a separate genus, *Xanthomyias* (Hellmayr 1927). It will not be surprising if molecular studies show that Sclater's Tyrannulet represents a link, yet strongly differentiated in plumage, between the phenotypically similar southern *reiseri* and *virescens* and the northern *urichi*.

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